

## WHAT IS CLAIMED IS:

1. A position measuring instrument that irradiates a reflector with measuring light to determine a distance, a direction, and a position on the basis of its reflected light, said position measuring instrument comprising:

a light source unit for emitting measuring light;

a light receiving unit for receiving reflected light;

scanning means that emits measuring light in a scanning direction while swinging, and that leads its reflected light to the light receiving unit; and

an angle detector for detecting a rotational position of the scanning means;

wherein:

said measuring light includes distance measuring light expanding in a fan-shaped manner; and

a distance to the reflector is measured by its reflected light.

2. A position measuring instrument according to Claim 1, wherein:

said measuring light is emitted in a fan-shaped manner by a diffuse optical system provided on the scanning means, and then reflected light entered from the diffuse optical system is led to the light receiving unit.

3. A position measuring instrument according to Claim 1, wherein:

said measuring light includes collimation light;  
said light receiving unit has a collimation-use light receiving sensor for receiving the collimation light;  
and

said collimation-use light receiving sensor detects a collimation center and a deviation of the reflector by the reflected light.

4. A position measuring instrument according to Claim 1, wherein:

a plurality of reflectors can be measured.

5. A position measuring instrument according to Claim 1, further comprising:

a transmitter for transmitting to the measured reflector measured data relating to the reflector;

6. A position measuring instrument according to Claim 5, wherein:

on the basis of each detected position of a plurality of reflectors, measured data relating to each reflector is transmitted to each reflector.

7. A position measuring instrument according to Claim 5, wherein:

said light receiving unit comprises an imager, and transmits image data detected by this imager to the

reflector.

8. A position measuring instrument according to  
Claim 7, wherein:

said image data is associated with position data.